A note on *Nascio vetusta* (Boisduval) (Coleoptera: Buprestidae) from Australia

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ABSTRACT

A new larval host plant, *Eucalyptus goniocalyx* F. Muell. ex Mig. (Myrtaceae), is recorded for the Australian buprestid beetle *Nascio vetusta* (Boisduval). Its habitat is briefly recorded and aspects of the larval/pupal chambers are described. No other buprestids have been recorded from *Eucalyptus goniocalyx*. *Nascio vetusta* has only been recorded breeding in myrtaceous genera *Eucalyptus* and *Metrosideros*, possibly indicating first-degree oligophagy.

INTRODUCTION

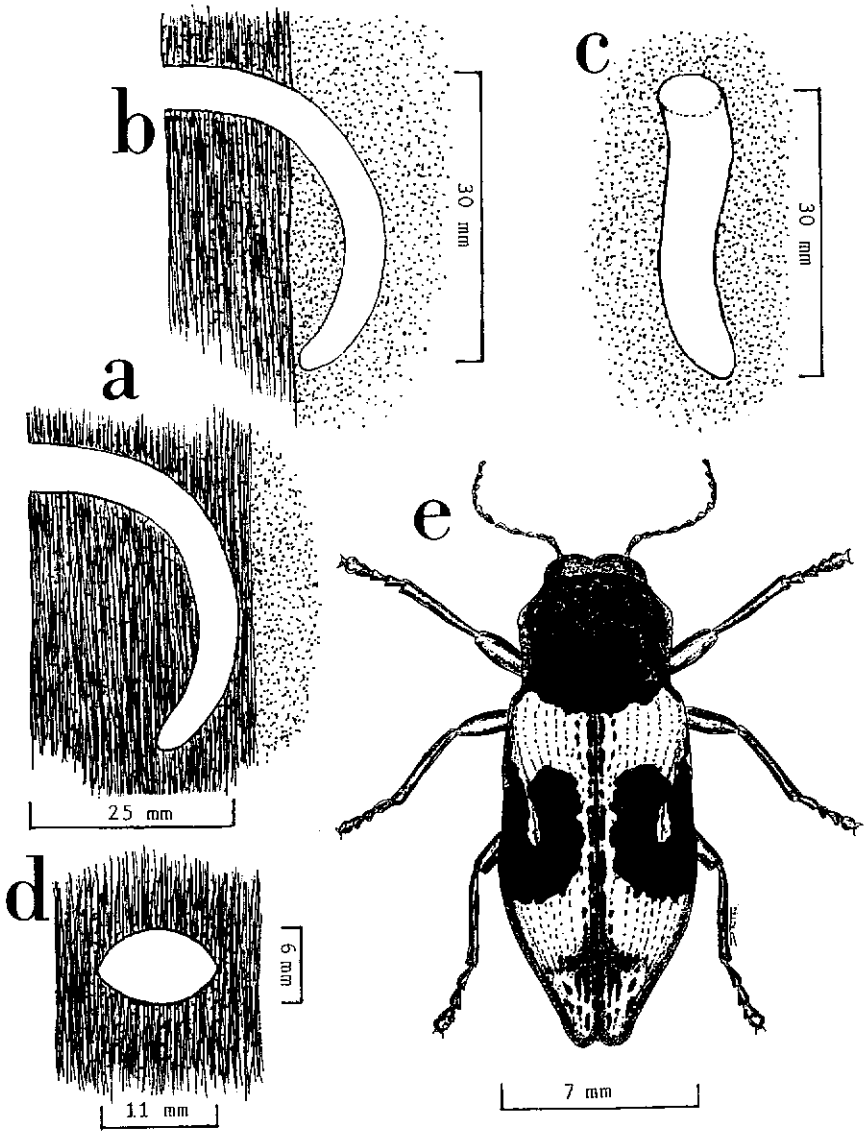
Nascio vetusta (Boisduval) (Fig. 1e) is a poorly known species of Buprestidae endemic to Australia. It is a cryptic, brown and orange-brown species occurring in southeastern Australia (Carter 1929). Tillyard (1926: 218) described the species as having a "strongly ridged pronotum and brown elytra with large blackish blotches, and looks as though it were carved out of wood". Very little data have been recorded on the biology and behaviour of the species. Tepper (1887) and Hawkeswood and Peterson (1982) recorded several larval host records from the genera *Eucalyptus* and *Metrosideros* (Myrtaceae) from South Australia and New South Wales respectively. New observations on the biology of the species are provided below.

OBSERVATIONS

On 4 July 1994, JRT undertook a buprestid larval host survey of an area of heathland located on a hillside on the western side of Warrys Road, Hill End, New South Wales (ca. 33°02'S, 149°25'E). The area examined was situated near the top of the hill and measured about 80 m long by 10 m wide. A thick understorey of *Cassinia arcuata* R. Br. (Asteraceae) dominated the lower part of the hill and formed the lower boundary of the area surveyed. The area itself was dominated by *Pultenaea subternata* Williamson and *Dillwynia phylicoides* Cunn. *species complex* (both Faboideae) with *Acacia buxifolia* A. Cunn. (Mimosoideae) dominating the northern section. (While descending the hill after having completed the buprestid larval host survey,) JRT noted a large, dead *Eucalyptus goniocalyx* F. Muell. ex Mig. about 20 m in height and upon closer examination of the trunk and limbs, in excess of 500 oval shaped exit holes (Fig. 1d) were observed. Each hole measured about 10–11 mm wide and 6 mm high. In order to examine the larval chambers, strips of bark were removed from the trunk and during this process a number of dead adult beetles were seen, trapped in the bark of the tree. These beetles were identified as *Nascio vetusta* (Biosduval), a species previously recorded on 3 Dec. 1983 at Hill End on a stem of *Cassinia longifolia* R. Br., 1 km south of the survey area (JRT, unpubl. data). Some sections of bark were removed from the trunk of the tree at heights from ground level to 2.5 m and additional adults were recorded. With the exception of one beetle, all were found trapped in the bark. That beetle was found in a pupal chamber in the tree (Fig. 1b) with head positioned upwards and abdomen and legs facing outwards from the centre of the tree. An examination of the larval chambers revealed a consistent size and shape. The larval/pupal chambers (Fig. 1c) were mostly a reversed S-shape, measuring about 30 mm in length from the bottom of the chamber to the opening of the exit hole and were about 10 mm in diameter at a point midway down the chamber. The bark removed from the host tree for examination varied from 1.5 cm to 3.5 cm in thickness. In the thicker bark, the larval chambers were situated within the bark only, while in the thinner bark, the exit holes passed straight through the bark and most of the associated chambers were in the sapwood of the tree. Illustrations of the larval/pupal chambers of *N. vetusta* are provided in Figures 1a–c.

DISCUSSION

Tepper (1887) was the first *author* to provide biological data on *N. vetusta* (cited as *Nascio vetustus*), but this work has been overlooked



pupal chamber in bark and sapwood (dots); c: plan view of larval/pupal chamber in sapwood with bark removed; d: oval-shaped exit hole; e: adult. (Drawings: J. R. Turner.)

Table 1. Larval host records for the Australian buprestid *Nascio vetusta* (Boisduval).

Host plant species	Reference	State
Eucalyptus baxteri (Benth) Maiden and Blakely ex J. Black	Tepper (1887)	South Australia
Eucalyptus obliqua L.Hérit.	Tepper (1887)	South Australia
Eucalyptus haemastoma Sm.	Hawkeswood and Peterson (1982)	New South Wales
Eucalyptus saligna Sm.	Hawkeswood and Peterson (1982)	New South Wales
Metrosideros sp.	Hawkeswood and Peterson (1982)	New South Wales
Eucalyptus goniocalyx F. Muell. ex Mig.	Turner and Hawkeswood (this paper)	New South Wales

by almost all entomologists of the 20th Century. Tepper (1887:16) noted that the larva of *N. vetusta* lived in the dry, corky bark of stringybark gum trees, i.e., *Eucalyptus obliqua* L'Hérit. and *E. baxteri* (Benth.) Maiden and Blakely ex J. Black (cited incorrectly as *E. capitellata* Smith, see Blakely 1972), and that the adults were rarely observed on the trunks of the same trees. Hawkeswood and Peterson (1982) listed a number of larval host records of *Eucalyptus* spp. and *Metrosideros* sp. (Myrtaceae) in New South Wales. The larval host records that are available at present for *N. vetusta* are reviewed in Table 1. The data available indicate

that *N. vetusta* displays first order oligophagy (*sensu* Jolivert 1992) on *Eucalyptus* and *Metrosideros* (Myrtaceae). In addition, the related species, *N. simillima* Van de Poll has been recorded from *Eucalyptus* (Hawkeswood and Peterson 1982; Hawkeswood 1990). *Nascio*, an endemic Australian genus, therefore shows a very close relationship with *Eucalyptus* which is probably ancient and co-evolutionary (Hawkeswood and Peterson 1982). The record of *Metrosideros* as a larval host (Hawkeswood and Peterson 1982) represents a recent selection to an introduced plant growing in an urban environment since *Metrosideros* is not native to Australia. From the examination of the larval/pupal chambers, it is evident that *N. vetusta* is not a deep-boring buprestid and that if the bark is thick enough, the larvae will remain in the bark without gnawing into the underlying sapwood. Clearly the beetle is able to derive enough nutrients and moisture from the dead bark itself without resorting to feeding on the more nutritive sapwood. Intraspecific competition may be contributing to broader niche specialization in terms of larval food, i.e., sapwood and bark. It appears, like other Australian Buprestidae, e.g., *Diadoxus* (Hadlington and Gardner 1959) and *Anilara* (Hawkeswood 1988), that *N. vetusta* is capable of forming large populations in the wood of selected trees, almost to the exclusion of other wood-boring beetles. It is probable that this species, while being widespread, displays only larval abundance and that adults (when collected in the field) are uncommon, do not have a very long life-span and do not feed or rarely feed. *Nascio (s. s.)* has not been recorded as floral, foliage or bark feeders as adults. Brooks (1949) recorded *N. simillima* on *Eucalyptus resinifera* Smith but did not clearly indicate whether the beetle inhabited the leaves only, the bark only, or both, while Williams and Williams (1983) briefly noted that *N. vetusta* had been found on *Eucalyptus* trunks, but also did not describe any feeding by the adults.

Eucalyptus goniocalyx, the Bundy, has not been recorded previously as a larval host for an Australian buprestid. This species is a tree growing to 30 m high which prefers mostly deep, sandy soil and extends from the coast to the tablelands up to 1,000 m altitude from Victoria to New South Wales and South Australia (Blakely 1972). It is widespread in the Blue Mountains and associated tablelands. The beetle fauna associated with this tree is poorly known, so that any further observations are likely to substantially increase knowledge in this area.

ACKNOWLEDGEMENTS

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